

## Claims:

1. A method for producing purified steam, wherein a feed stream of water is fed through a falling film evaporator to produce a mixture of steam and liquid, liquid being collected  
5 below the lower end of the falling film evaporator to form a volume of liquid, and a flow essentially consisting of steam being conducted upward in a spiraling rotational path; droplets being separated from said upward flow, characterized by that the separated droplets form a reject stream, which is continuously removed from the process, and at least part of the collected volume of liquid is returned to the feed stream to form a circulating  
10 liquid.
2. A method according to claim 1, wherein a second reject stream is withdrawn from the circulating liquid.
- 15 3. A method according to claim 1 or 2, wherein the droplets are separated by means of a temperature controlled surface.
4. A method according to any claim 1-3, wherein dissolved gases are continuously removed from the circulating liquid.
- 20 5. A method according to any of claims 1-4, wherein the mass flow of the circulating liquid is at least twice the maximum product steam output.
6. A device for the production of purified steam, comprising a falling film evaporation tube  
25 unit and a unit for separating steam and liquid; the separating unit comprising:  
a central downpipe for receiving the evaporation product,  
an inner shell and an outer shell, the inner shell locally providing for passage of steam to the outer shell,  
a set of fins forming a spiral path surrounding the downpipe,  
30 a first exit tube connected to the bottom of the space between the inner and the outer shell,  
a second exit tube connected to the space inside the inner shell, and  
recirculation tubing connecting the second exit tube to an inlet of the falling film evaporation unit.

7. A device according to claim 6, comprising means to withdraw a reject stream from the recirculation tubing.
8. A device according to claim 6 or 7, comprising temperature control means fitted to the  
5 outer shell.
9. A device according to any claim 6-8, comprising means for withdrawing a stream from the inlet end of the falling film evaporator.
- 10 10. A device according to any claim 6-9, comprising a pump in the recirculation circuit having a mass flow capacity of at least twice the maximum product steam output of the device.